

Amendment to the Claims:

1. (Currently Amended) A method of planning a radiation therapy, the method comprising the steps of:
 - determining a dose distribution for a target volume on the basis of a first image;
 - 5 determining at least one of shape and position variation of a surface of an object of interest in the target volume between the first image and second image; [[and]]
 - adjusting the dose distribution on the basis of the at least one of shape and position variation; and
 - 10 at least one of storing the adjusted dose distribution and displaying the adjusted dose distribution;
 - wherein the first and second images were taken at different points in time of a radiation treatment process.
2. (Original) The method of claim 1, further comprising the steps of:
 - applying a first surface mesh to the object of interest in the first image;
 - performing a first adaptation of the first surface mesh to a surface of
 - 5 the object of interest in the first image resulting in a second surface mesh;
 - applying the second surface mesh to the object of interest in the second image;
 - performing a second adaptation of the second surface mesh to the surface of the object of interest in the second image resulting in a third surface mesh;
 - 10 and
 - obtaining a difference between the second surface mesh and the third surface mesh.
3. (Original) The method of claim 2 further comprising the steps of:
 - generating a volumetric model of the object of interest on the basis of the second surface mesh; and

5 deforming the volumetric model on the basis of the difference resulting
in a deformed volumetric model.

4. (Original) The method of claim 3,
wherein the difference is used as a boundary condition for the
deformation of the volumetric model.

5. (Original) The method of claim 3,
wherein the at least one of shape and position variation of the object of
interest is determined on the basis of the deformed volumetric model.

6. (Original) The method of claim 3,
wherein a biomechanical model is taken into account for the
deformation of the volumetric model.

7. (Currently Amended) The method of claim [[1]] 2, wherein
the first and second images are computed tomography (CT) images.

8. (Cancelled)

9. (Previously Presented) ~~A~~ [[The]] radiation therapy planning
device, of claim 8, further comprises comprising:

a memory for storing a first image and a second image; and

a processor for:

5 applying a first surface mesh to the object of interest in the first image;
performing a first adaptation of the first surface mesh to a surface of
the object of interest in the first image resulting in a second surface mesh;
applying the second surface mesh to the object of interest in the second
image;

10 performing a second adaptation of the second surface mesh to the
surface of the object of interest in the second image resulting in a third surface mesh;
obtaining a difference between the second surface mesh and the third
surface mesh;

generating a volumetric model of the object of interest on the basis of
15 the second surface mesh; [[and]]
deforming the volumetric model on the basis of the difference resulting
in a deformed volumetric model[[.]];
determining a dose distribution for a target volume on the basis of the
first image;
20 determining at least one of shape and position variation of an object of
interest in the target volume between the first image and the second image; and
adjusting the dose distribution on the basis of the at least one of shape
and position variation;
wherein the first and second images where taken at different points in
25 time of a radiation treatment process.

10. (Original) The radiation therapy planning device of claim 9,
wherein the difference is used as a boundary condition for the
deformation of the volumetric model; and
wherein a biomechanical model is taken into account for the
5 deformation of the volumetric model.

11. (Currently Amended) A computer readable medium
carrying a computer program for a radiation therapy planning device, wherein a
processor of the radiation therapy device performs the following operation when the
computer program is executed on the processor:
5 determining a dose distribution for a target volume on the basis of a
first image;
applying a first surface mesh to the object of interest in the first image;
performing a first adaptation of the first surface mesh to a surface of
the object of interest in the first image resulting in a second surface mesh;
10 applying the second surface mesh to the object of interest in the second
image;
performing a second adaptation of the second surface mesh to the
surface of the object of interest in the second image resulting in a third surface mesh;
obtaining a difference between the second surface mesh and the third
15 surface mesh;

generating a volumetric model of the object of interest on the basis of the second surface mesh;
deforming the volumetric model on the basis of the difference resulting in a deformed volumetric model; and
20 adjusting the dose distribution on the basis of the deformed volumetric model;
wherein the first and second images were taken at different points in time of a radiation treatment process.

12. (Previously Presented) The method of claim 2, wherein the second surface mesh and the third surface mesh result from applying the same surface model.

13. (Previously Presented) The radiation therapy planning device of claim 9, wherein the second surface mesh and the third surface mesh result from applying the same surface model.

14. (Currently Amended) A method for adapting a dose distribution of a radiation therapy plan comprising:
adapting a first surface mesh to an object of interest in a first image resulting in a first adapted surface mesh;
5 adapting a second surface mesh to the object of interest in a subsequent image resulting in a second adapted surface mesh;
deforming a volumetric model of the object of interest based on a difference between the first adapted and the second adapted surface meshes; and
at least one of storing the deformed volumetric model and displaying
10 the deformed volumetric model.

15. (Currently Amended) The method of claim [[14]] 17, wherein the subsequent image is acquired prior to a radiation therapy treatment.

16. (Currently Amended) The method of claim [[14]] 17, wherein the subsequent image is acquired prior to a predetermined interval of radiation therapy treatments.

17. (New) The method of claim 14, wherein the second surface mesh is the first adapted surface mesh.